

# DENVER PC BOARDWATCH

NEWSLETTER FOR DENVER AREA TELECOMPUTING AND TELECOMMUNICATIONS

Editor: Jack Rickard Volume I: Issue 7 ISSN: 0894-5209 September 1987

## E-MAIL DIRECTORY:

Electronic mail services hold the promise of instant message delivery nationwide at reasonable cost. Unfortunately, the services are less than universal. Last issue, we noted a bridge service titled DASNET joining 18 different E-Mail services such as MCI mail, Compuserve, etc. For \$4.50 per month, the service allows you to send E-Mail to/from any of the 18 services. [DA Systems Inc., 1503 Campbell Ave., Campbell, CA 95008; (408) 559-7434.] This is a major step toward making E-Mail a universally accessible utility. However, to send a message to an individual you still must know which service they subscribe to as well as their electronic address. The NATIONAL E-MAIL registry service is operating on-line at (800) 622-0505 using 7 data bits, 1 stop bit, and even parity. The service allows you to enter your name, address, telephone, and E-Mail service and address. Once you've registered, the company will send you a packet of info including instructions on how to obtain a copy of the directory.

## MS-DOS 3.3:

Microsoft Corporation intends shipping version 3.3 of MS-DOS to original equipment manufacturers (OEMs) around the first of September. Version 3.3 should duplicate most of the features of IBM's PC-DOS 3.3 released last April. IBM upgraded PC-DOS 3.2 to 3.3 independently and has encountered some compatibility problems with third party hard drive systems. Microsoft insists that MS-DOS 3.3 avoids such difficulties. If you operate a clone machine and have encountered hard disk problems with IBM-PC DOS 3.3, this may be a solution. Microsoft Corp., 16011 NE 36th Way, PO Box 97017, Redmond, WA 98073; (206) 882-8080.

## NEW SEAGATE DRIVE:

Seagate is currently advertising their new model ST251 hard drive system. The unit provides 40 MBs of storage with an average access time of 40 msec and can be used in IBM PC, PC-XT, or PC-AT models and compatibles. The new drive comes with partitioning software to effectively produce two 20 MB hard drive units, each with an apparent average access time of 28 msec. Notably, the unit consumes only 11 watts of power. Seagate Technology, 920 Disc Drive, Scotts Valley, CA 95066;

(800) 468-3472. Custom Micro offers the unit via mail for \$469. When checking prices note there are apparently separate AT and XT configurations not always mentioned in advertising. The AT version is slightly less expensive. Custom Micro, P.O. Box 12760, Houston, TX 77217; (800) 828-7866.

## LONG DISTANCE TIPS:

When area code 303 received equal access long-distance service, each subscriber was asked to select a long distance company as their primary carrier. Thereafter, each long-distance call dialed direct from their home telephone was automatically routed through the selected company. The local telephone company also levied a \$5.15 charge to change the primary carrier selection. A little known aside - you still have access to ALL carriers serving your area. And, you don't need to open any special accounts with them or receive separate bills. In fact, you don't need to contact them at all. By selecting your primary carrier, you simply specified which long distance company was used when you direct dialed a number using 1 plus the area code. Long-distance calls can be made via any carrier and the call will be billed on your monthly telephone bill quite normally by using an equal access code prefix. All long-distance carriers are assigned a five-digit equal access code number. You can use any carrier by simply prefacing the number with the access code number. Access codes for some popular long distance companies are listed below along with toll free numbers if you have questions:

ALLNET	.....10444	....(800)982-8888
AT&T	.....10288	....(800)222-0300
ITT	.....10488	....(800)526-3000
MCI	.....10222	....(800)333-4000
MID AMERICAN	....10801	....(800)228-0068
US SPRINT	.....10777	....(800)521-4949
WESTERN UNION	..10220	....(800)562-0240

For example: If your primary carrier is AT&T and you wish to use US SPRINT to experimentally determine if you really can hear a pin drop between your home and the number (617) 543-2345, simply dial 10777-1-617-543-2345. As it turns out.....you can't.

### JENNINGS RECEIVES AWARD.

Tom Jennings, president of Fido Software, has received the first Andrew Fluegelman award to recognize programmers making substantial and innovative contributions to personal computing. The award is a memorial to Andrew Fluegelman who founded PC World Magazine, wrote the popular PC-Talk communications package, and invented the freeware/shareware concept of software distribution. The \$5000 prize is sponsored by PCW Communications and the Software Publishers Association. More than 125,000 users worldwide swap information on Jennings's Fidonet system.

### DOES SHAREWARE PAY?

The shareware technique for distributing software is growing in popularity daily. The obvious advantage - low startup costs. Joe Programmer can place his **RANDOM SORT AND DELETE** utility program on the market more or less by uploading a copy to a local BBS. If the program proves popular, it will spread nationwide. If even a small percentage of those who use the program send in his requested \$11.26 contribution, the receipts will not be entirely gobbled up by national advertising campaigns. The obvious question is "Does shareware pay?" The answer appears to be "Yes - sometimes." Apparently there's some attraction given the phenomenal number of packages making the rounds under the shareware rubric. For some, the rewards appear to be substantial. For others, the returns are quite modest. Quality products with good documentation appear to do best (surprise - surprise). Datastorm Technologies Inc. began life as a hobby for a pair of enthusiasts in Columbia MO. They distributed the popular communication package **ProComm**. The company expects 1987 revenues of \$1.5 million from the current version 2.4.2. MaGee Enterprises of Norcross, Georgia puts out a \$46 hard disk organizer titled **Automenu**, currently in version 4.0, and expects 1987 revenues of about \$1 million. Quicksort Corp of Seattle distributes a very popular word processor titled **PC Write**. The requested contribution fee is \$89 and the company will expect over \$2 million this year with weekly receipts as high as \$45,000 from their latest version 2.71. Oddly, users often report better telephone support with shareware products than from commercial software. Local hopefuls in the shareware sweepstakes include Terus Corporation of Broomfield with the **MINDS(tm)** text knowledge base and Ray Horn Jr. of Denver with **TCHelper**, a pop-up function library reference for Borland's Turbo C language compiler. Good luck gents.

### 1-2-3 APPLICATIONS SANS 1-2-3:

Sofilogic Solutions introduced a new product titled **@LIBERTY** which acts as a spreadsheet compiler. Spreadsheets developed on Lotus Development's popular 1-2-3 spreadsheet program can be compiled to stand-alone executable files. These spreadsheet application files can then be run without the Lotus product. Just as importantly, users are unable to "break" out of the application into the underlying spreadsheet. As a result, confidential underlying spreadsheet data remains confidential. The new product is priced at \$99.99 and orders are accepted via voice phone at (800)272-9900. Sofilogic also operates a product support BBS at (603)644-5556

### SHAREWARE NEWSLETTER:

Nelson Ford brings us a very detailed newsletter covering new releases and developments in shareware software. The periodical is titled **THE PUBLIC (Software) LIBRARY Newsletter** and it's issued monthly at \$12 per year. The newsletter details the latest releases and developments among major shareware titles such as Automenu 4.0, PC-File, and PC-Write. Additionally, the publisher offers shareware on disk from a library of nearly a thousand diskettes at a flat fee of \$5 per diskette. Very possibly Mr. Ford's service may bring order to the chaos of the shareware distribution system. For you software bargain hunters.....highly recommended. **THE PUBLIC (Software) LIBRARY**, P.O. Box 35705, Houston, TX 77235-5705. (713)721-5205. What was the first word uttered by man from the surface of the moon? **HOUSTON**. Believe it...or not.

### EMS VERSION 4.0

One of the most limiting characteristics of DOS versions currently available is the 640K byte limit on RAM memory. In the past, several vendors have attempted to introduce extensions to memory using device driver software. The problem? Too many vendors and, consequently, too many memory extension standards. As a result, very few popular programs took advantage of memory above 640K. Now apparently a gaggle of vendors have joined together in support of a new version of one of these standards: the **LOTUS/INTEL/MICROSOFT** expanded memory specification (EMS). Even AST research, who formerly marketed a compelling extended memory standard (EEMS), has joined the fold. With a memory expansion card incorporating EMS version 4.0, users can access up to 32M bytes of RAM and run several programs simultaneously. This extends the life of existing DOS machines in-

definitely. While the world anxiously awaits the arrival of IBM's much heralded and little delivered OS2 operating system to gain more memory and multitasking, XT clone owners will already have both via one of these cards. Beware of a flurry of memory cards offered at clearance prices in the near future that do not support EMS 4.0.

#### TIME:

In past issues we have noted a number of ways to synchronize your computer clock/calendar to a reliable time standard. The National Bureau of Standards (NBS) in Boulder is currently working on an on-line service that would issue an ASCII string each second with the correct UCT (Coordinated Universal Time) tied to the NBS master clock in Boulder. This is the same time base used by radio station WWV operating at 2.5, 5, 10, 15, 20, and 25 MHz and announced each minute. With a very short BASIC program, you will be able to dial up, log on, and synchronize your PC to one of the most accurate time standards in the world and the legal basis for all civilian time in the US. The service should be available sometime in October of this year. To recap past information, you can also obtain NBS time by voice line locally at (303)499-7111. Time is announced on the minute with a marker tone. The US Naval Observatory (USNO) in Washington D.C. is the keeper of the clock for all Department of Defense agencies. They maintain a voice line at (900)410-TIME with a \$0.50 charge for the service. They announce time each ten seconds with tone. USNO also maintains a BBS at (202)653-1079 with more info than you ever needed about time all around the world. Finally USNO maintains a time service for digital clocks similar to the one under construction in Boulder. The number is (202)653-0351.

**CO-COMPUTE 2.0** Harmony Technology Associates introduces a handy and slightly different communication program with version 2.0 of Co-Compute. The program sports a couple of interesting features including the ability to instantly toggle between voice and data transmission. The program also allows dialog via pop-up windows while applications are run on either computer and controlled from either end. If you have ever tried to talk someone through a detailed process via a single telephone line, you will appreciate this gem. The \$279 price may dampen your enthusiasm somewhat. Harmony Technology Associates, 3700 S. Sepulveda Blvd, No. 332, Los Angeles, CA 90034; (213)398-0878

## LOCAL ACCESS

#### SOLAR BBS:

The U.S. Commerce Department National Oceanic and Atmospheric Administration (NOAA) Space Environment Laboratory (SEL) in Boulder, CO sponsors a new **SPACE ENVIRONMENT SERVICES CENTER (SESC) FORECAST AND ADVISORY BULLETIN BOARD** [snappy little title eh?]. The board operates at (303)497-5000 and provides a mother-lode of information concerning solar flare activity and geomagnetic conditions of interest to radio operators, astronomers, and scientists. They sport around-the-clock forecasts, warnings, and real-time data concerning solar occurrences such as flares, solar wind disturbances, and coronal mass ejections, as well as geomagnetic disruptions. These activities can cause radiation hazards to astronauts, surface charging of satellites, ionospheric communication disruptions, induced currents in long lines, and heating of the upper atmosphere. **Clearly, if you're planning a picnic or other family outing, check with these people first.** Remember, safety always. If you hadn't put it all together yet, the requisite acronym would almost have to be **NOAASESCSELFABB**. This doesn't appear to spell out anything recognizable. It's still a fascinating BBS, well done by any measure and undoubtedly useful to radio amateurs and scientists.

#### ON-LINE CONSULTING:

Lee Lasson of Data Comm, a consulting service, brings us a new Fidonet member from Drake Colorado with **ON-LINE CONSULTING 104/45** at (303)449-5251 from 6:00 PM to 8:00 AM and 24 hours on weekends. The new Fido board is IBM based running Opus 1.01 and sports several items of note. First, they are introducing a directory of consultants. Those who provide consulting services can "register" their names, addresses, and areas of expertise. Soon users will be able to look up particular specialties from the directory. The board also provides special message/file areas for Desktop Publishing applications. Clip-art graphics for use in Aldus Pagemaker and Xerox Ventura Publisher programs are available. Finally, the board displays the only Microsoft Windows applications file area we are aware of. Welcome to the net Lee Lasson.

#### TERUS PUBLIC BBS:

Fidonet is just a quarter this month. Joining the net this month with two BBS is Terus Corporation with 104/43 and 104/44. The 44 node is a private BBS devoted to support of registered users of Terus



Corps. new shareware product **MINDS(tm)**. MINDS is an artificial intelligence based natural language interface for ASCII text files. Marry up MINDS with your text file and start asking questions in conversational English. The concept sounds fantastic and the program is due for release soon. We will review this program in depth in a future issue. Node 43 is the public side of the house maintained for more or less the same purpose as **TERUS BBS** at (303)469-7161. When MINDS is released, anyone will be able to call up and download the program as well as a library of pre-indexed files termed "contexts". Initially, the documentation for popular shareware programs will be made available. Based in Broomfield, Terus brings us one of the very few locally-based shareware products of significant scope. If MINDS even partially fills the claims made by Terus President Todd Hill, you will here a great deal more about it from the national press. Remember where you heard it first.

#### **COLORADO BROADCASTERS BBS:**

Yet another Fidonet addition is **COLORADO BROADCASTERS BBS 104/42** at (303)572-6256. From what we can tell, this board is devoted to the Society of Broadcast Engineers (SBE) and to commercial AM and FM radio broadcasting in general. Notably, this BBS provides text files and even database data files describing hundreds of radio frequency allocations. These lists also provide very accurate latitude/longitude data for selected local area transmitter sites. Locate one on the list near you and you'll have a pretty fair idea of where you are at - assuming you didn't already know. For example: they list the Amoco Building in Denver as West 104-59-45 and North 39-44-30 and a site at Hampden and Yosemite as West 104-52-57 and North 39-39-02. Message traffic tends toward the technical. Interesting none the less.

#### **UNKNOWN BBS PULLS PLUG:**

Henry Birdseye has announced the demise of **UNKNOWN BBS** at (303)988-8155 as of August 14. Henry is moving to another state to start a new job and he's taking the board with him. Unknown BBS celebrates its fourth birthday this month as one of the oldest BBS in the area. Over 50,000 calls were made to the system which specialized in jokes and maintained a local BBS list in electronic file format. The BBS was recently featured in Westword Magazine. Sorry to see you go Henry.

#### **MULTILINE FIDO ADDITIONS:**

Two new boards join the Fidonet with Multi-line capability. **MODEM NET** brings us two lines initial-

ly at (303)680-8153 as net 104 node 47. Modem Net features on-line mail order of computer hardware, software, and supplies. **PHOENIX BBS** joins in as net 104 node 739 at (303)841-9570 with three lines. Multiline capability allows callers to phone in on a single number which automatically routes them to one of several telephone lines. The result is that more than one user can access the system simultaneously - opening up the possibility of a chat mode with other users. Further, chances of getting a busy signal go down and chances of connecting go up.

## **LONG DISTANCE**

**GOVERNMENT BBS:** Who is the biggest sysop on the block? Uncle Sam of course. All branches of the US Government have seized on BBS as an effective means of getting the word out. Back by popular request and updated with some appropriate new additions, we repeat our Government BBS list from the April issue. See the accompanying table.

#### **ASTRONOMY BOARD DIRECTORY:**

Astronomical Society of the Pacific (ASP) is compiling a list of electronic bulletin board systems devoted to the care and feeding of astronomers. If your board treats astronomical subjects notify Andrew Fraknoi at ASP, 1290 24th Ave., San Francisco, CA 94122.

#### **JOB BOARDS:**

A number of corporations have discovered BBS as a means of recruiting technical professionals. Many of these employment boards provide information on the company, current job openings, benefits information, and info on the local environment. Usually, you can upload an ASCII text file containing your resume and apply for the desired position on-line. Business People Inc. operates a BBS at (612)941-5723 which actually provides access to a number of miniboards operated by individual companies. After connect, simply enter a password to get the company you like. The list below is representative rather than complete:

<b>PASSWORD</b>	<b>.....COMPANY</b>
<b>BPI</b>	<b>.....Business People Inc.</b>
<b>CAREER ACCESS</b>	<b>...Northrop</b>
<b>DRIVE</b>	<b>.....Seagate</b>
<b>EAGLE</b>	<b>.....United Technologies</b>
<b>JOBLINK</b>	<b>.....LTV</b>
<b>ROHR</b>	<b>.....Rohr Industries</b>



Additionally, other companies operate single mode recruiting BBS in-house. If you experience difficulties connecting with the usual 8 data bits, no parity, and 1 stop bit parameters (8N1), try 7 bits, Even parity, and 2 stop bits (7E2)

COMPANY .....	TELEPHONE
Sperry .....	(617)263-3857
Northrop .....	(213)938-5532
EDP Professionals .....	(704)554-1102
Techsource Inc. ....	(513)271-7703
Career Connection ..	(303)871-0801

#### LAND OF THE RISING PHONE BILL:

Over 3000 Japanese enthusiasts subscribe to CompuServe Information Service via the KDD digital network in Japan. They pay roughly 10,000 yen (\$70) hourly for the privilege. Our \$6.50 per hour charge seemed high before.

#### WEATHER SERVICE:

WeatherBank Computer Operations of Salt Lake City, Utah operates one of the most exhaustive weather information bulletin boards in the nation on a SCOOP telephone line at 1-976-7644. The SCOOP service results in a \$0.30 per minute charge directly on your telephone bill. The service will tell you more than you ever wanted to know about weather including the latest National Weather Service files, lightning strike maps, weather radar

display data, (for those who can display it) and forecasts for virtually any major city in the US. The interface is fairly cryptic - we suspect to boost time on-line and consequently revenues. Still, this service provides up-to-date (almost real-time) weather data virtually unobtainable anywhere else. To retrieve today's forecast for the Denver area fairly inexpensively, dial the number and enter NWS 2, DEN. WeatherBank Computer Operations, 2185 South 3600 West, Salt Lake City, UT 84119; (801)973-3223 (voice).

#### SPRINTOUT:

Typesetting Service Corporation of Providence, Rhode Island brings us the SPRINTOUT BBS at toll free (800)367-7025 or (800)777-TYPE numbers. This system is particularly usable and it runs on a DEC VAX 750 mainframe computer. The system accepts file uploads in XMODEM format from PC compatibles or MACBINARY format from Macintosh computers. Files are printed out in 300 dpi laser printout or 650-2540 dpi laser typeset formats. The system accepts Aldus Pagemaker or Ventura Publisher file formats from PC compatible units and any Apple Laserwriter compatible format from the Macintosh. The system operates 24 hours at 300/1200/2400 bps. Typesetting Service Corporation, Fifty Clifford Street, Providence, RI 02903; (401)421-2264.

## GOVERNMENT BBS LIST

TITLE .....	DESCRIPTION .....	NUMBER
Budget and Finance BBS .....	Financial matters .....	(202)786-3640
Census Bureau Manpower .....	Census Bureau employment opportunities .....	(301)763-4574
Census Bureau CMIC .....	Microcomputer news/info for staff .....	(301)763-4576
COE Manpower BBS .....	Army Corps of Engineers .....	(202)272-1514
East Coast Marine Weather BBS .....	National Weather Service .....	(301)454-8700
Economics BBS .....	US Department of Commerce .....	(202)377-0433
Exporter's BBS .....	Export/Import Bank .....	(202)566-4602
Fannie Mae BBS .....	Federal National Mortgage .....	(202)537-7475
Information Technology Center BBS .....	Veterans Administration .....	(202)376-2184
Institute Computer Science and Technology .....	National Bureau of Standards .....	(301)948-5718
IRS User Assistance BBS .....	Internal Revenue Service .....	(202)756-6109
Megawatts BBS .....	Department of Energy .....	(202)252-1518
National Center Health Statist .....	Health/disease control .....	(301)436-6346
National Oceanic/Atmospheric .....	Solar Flare/Geomagnetic data .....	(303)497-5000
Population Estimate BBS .....	Bureau of Census .....	(301)763-5225
Science Resource Studies BBS .....	National Science Foundation .....	(202)634-1764
US Naval Observatory .....	Time services world wide .....	(202)653-1079
US Naval Observatory .....	UCT Time-Of-Day for digital clocks .....	(202)653-0351
World Bank .....	International Lending .....	(202)477-8500

#### NATIONAL STATISTICS:

We note Meade Frierson of Birmingham Alabama is doing a credible job of assembling statistics on IBM based bulletin boards on a national basis. Some of the findings he's put up on the public message boards include a breakdown of BBS software usage as follows:

FIDO/OPUS	.....1095	....41.49%
PC-BOARD	.....571	....21.63%
RBBS	.....530	....20.08%
TBBS/TCOM	.....271	....10.27%
COLLIE	.....90	....3.41%
WILDCAT	.....47	....1.78%
NOCHANGE	.....35	....1.33%

Over 60% of these BBS support 2400 bps operation and slightly over 40% can be reached via PC PURSUIT. Over 150 BBS support 9600 bps. Mr. Frierson also publishes a very well done national BBS list in electronic form that's updated each month. This kind of task amounts to either a mini-nightmare or a second career depending on your point of view. His September list contains 3032 BBS and it's available from Mike Yaklin's INFORMATION BOOTH BBS operating out of Wichita Kansas at (316)684-8744. The September list file would appear as IBMBD987.ARC. Mr. Frierson can be reached at Compuserve 73137,416.

#### BIG PEACH BBS:

Marshall Magee of Norcross Georgia operates the BIG PEACH BBS at (404)446-6650. Magee Enterprises distributes the popular Automenu 4.0 hard disk organizer via shareware. The Big Peach BBS provides technical support and the latest versions for the program which has garnered a strong following among shareware aficionados. Magee Enterprises, 6577 Peachtree Industrial Blvd, Norcross, GA 30092-3796. Note DATABANK BBS at (303)494-0167 has Automenu 4.0 available for download locally.

#### LOGON UNLIMITED:

We found a very interesting 32 line BBS in Redwood City, California titled LOGON UNLIMITED at (408)735-7190. This board operates in conjunction with a service called the PUBLIC DOMAIN SOFTWARE EXCHANGE to provide thousands of public domain/shareware programs available for download. Additionally, they offer a very interesting proposition. For a total investment of approximately \$42,000 (including \$25,000 license fee to them), they will show you how to build a BBS that will generate \$100,000 gross income per year offering

public domain software via a similar 32 line system. An interesting concept and an interesting and well done board. They still provide software for download to TIMEX/SINCLAIR computers as well. However, if anyone is grossing \$100,000 annually via a BBS we would like to hear more about it.

#### - 2400 BPS MODEMS -

#### IS IT TIME?

Just a few years ago, 300 baud modems were nearly universal. Thousands of communications pioneers sat transfixed as text plodded across their screen much after the fashion of the old teletype machines. Although initially fascinating, the 300 baud modems eventually drove many users to the near edge of sanity while waiting for a screen full of data to form. There had to be a better way.

The introduction of 1200 bit-per-second (bps) modems not only increased speed, it subtly changed terminology. Modem speed had earlier been measured in baud, a term from the Frenchman Baudot who developed an early communications code that still enjoys some application. The term represented a change in state or tone. With the 300 baud modems, individual bits of a data byte were represented by a change of audio tone from one frequency to another.

The next increment up in speed was actually to 600 baud. The 1200 bps modems commonly used today actually operate at tonal changes corresponding to 600 baud. But by using a clever phase-shift coding of this transmission, data bits could be transferred at an effective rate of two bits per baud or 1200 bits-per-second (bps). This increased speed provided much needed relief to hard-core modem users. But, the early 1200 bps units were well over \$1000 in price and few could afford them.

More recently, 300/1200 bps modems have fallen in price to well under a \$100 and 95% of all communication in the Denver area BBS community occurs at the 1200 bps rate. Yet for many, 1200 bps now seems quite slow. And among the serious hobbyists operating BBS, 2400 bps and even 9600 bps units are becoming more common.

In the 9600 bps area, no universal standards yet exist. To communicate at 9600 bps, both ends must use the same brand modem. In effect, chaos reigns in this market and most models are still in the \$1100-\$1300 range. For most of us, 9600 bps is still in the future.

Currently, 25% of all Denver area BBS support 2400 bps operation and nationally 60% of IBM based BBS support it. The 2400 bps still uses 600

baud tonal transmissions but phase-shift encodes each tonal change with 4 bits of data for an effective 2400 bps rate. A 100K file transfer at 2400 bps using an advanced file transfer protocol, such as ZModem or SEALink, can effectively move about 230 characters-per-second (cps). This corresponds to a total transfer time of about 7 1/2 minutes. With 1200 bps operation, the same file transfer requires 15 minutes - effectively 115 cps.

In terms of interactive feel, 300 baud operation caused characters to type across the screen in teletype fashion. The 1200 bps feel was more of line-by-line scrolling - a big improvement. The 2400 bps impression is more of entire screens rolling up into view. You will notice little difference between operating a computer across town at 2400 bps and operating your own PC.

Until recently 2400 bps modems have traded in the \$350-\$500 range with some bargain basement internal card models selling for roughly \$250. Suddenly, in August of this year, the bottom fell out. Several vendors began supplying external 300/1200/2400 bps units for under \$200.

Qubie is currently advertising a 2400 bps external model, the 2400E, at the same price as their 2400 bps internal half-card for IBM-PCs, the 2400I. Both models go for a reasonable \$189. These modems recognize the Hayes AT command set, and operate at 110/300/600/1200/ 2400 bps. Qubie, 507 Calle San Pablo, Camarillo, CA 93010; (800)821-4479.

Practical Peripherals just announced an external 2400 bps model at \$239 list price and an internal 2400 bps IBM-PC card for \$199. Practical Peripherals, 31245 La Baya Dr., Westlake Village, CA 91362 (818)991-8200. These modems are heavily discounted locally to \$185 plus \$11.86 shipping/tax for the external version and \$165 plus \$10 shipping/tax for the half-card by MODEM NET BBS at (303)680-8153. This local BBS runs a multi-line version of TBBS software and sells computer hardware and supplies by taking orders on-line and charging the purchase to Mastercard or Visa.

Finally, **ON-LINE STORE** offers a similar hardware/software discount mail-order service on a BBS at (805)656-0379 or by voice at (805)656-3741. They are currently offering a US Robotics Microlink 2400 bps internal card modem for \$169 or a model CTS 2424 external 2400 bps Hayes compatible unit for \$189. Shipping for either runs about \$8. Note that they also market a CTS 2424 external model for \$169. The lower priced version does **NOT** support the Hayes AT command set and most probably would not work with most communications software.

All units mentioned here claim compatibility with the CCITT (Consultative Committee International Telephonique et Telegraphique) V.22 and V.22 bis standards as well as Bell 103 and Bell 212A standards. In effect, any 2400 bps modem listed here will communicate with a 300, 1200, or 2400 bps modem of almost any model either here or in Europe. And they should all work with any popular communication package although you may have to change some parameters in your comm program if you do upgrade. Be aware that, these are currently the "bottom of the barrel" crop pricewise and multiple telephone jacks, accessible dip switches, attractive styling, durable construction, etc. are not very likely. Also realize that Texas Instruments has just released a modem chip-set that should cause 2400 bps prices to fall to around \$150 after the first of the year.

With 2400 bps modem prices currently at \$175-200, it makes sense to upgrade. The combination of long-distance telephone charge savings and the use of your own valuable time waiting for file transfers to complete at 1200 bps indicates a clear economic as well as aesthetic advantage to 2400 bps.

## SHAREWARE

### PKFIND:

Phil Katz of PKWare Inc. turned the BBS community upside down earlier in the year with his **PKARC** and **PKXARC** utilities. These programs compressed and archived files into smaller units suitable for storage and transmission over modem. Patterned after the popular **ARC** program developed by System Enhancement Associates, **PKARC** and **PKXARC** performed the same function but much faster. Now the same people have issued another utility titled **PKFIND**. Version 1.1 was released May 16 and it can be found on local boards stored under the filename **PKFIND11.ARC**. The program is very simple to operate. It finds files on a hard disk drive. Enter **PKFIND** and a file name. It prints out the DOS path containing the file, its size, last date and time updated. It then allows you to jump directly to that subdirectory or not as the mood strikes. This is really not revolutionary. Other **WHEREIS** type programs exist. **PKFIND** varies in two important respects. It is extremely fast. And it searches for **ARCHIVED** files as well as regular DOS files.

This is shareware at its best. No commercial company would bother marketing a program this small and limited in scope. Yet with the serpentine arrangement of directories on most users disks, this type of utility certainly makes life easier. And just as in



the PKARC fashion, Phil has given us speed beyond what we believed was possible. On a slow 20 MB Seagate ST225 hard drive with 19.9999 MB of data on it, PKFIND consistently found anything we asked for in less than 3 seconds. This is what utilities should be: fast, easy to use, and unobtrusive. Since most BBS enthusiasts have learned to archive almost everything, PKFIND should be a welcome addition. PKWare Inc., 7032 Ardara Avenue, Glendale, WI 53209. Support BBS is EXEC-PC BBS in Shorewood Wisconsin at (414)964-5160.

Available locally from EXCALIBUR FIDO 104/39 at (303)497-6673

## EDITOR'S NOTES

These are exciting times in the Denver electronic village. The computer industry as a whole seems to be in full blown resurgence from the consolidations and retrenching of the past year or so. The high technology-based Denver economy stands to benefit from this trend and the local hobbyist community is thriving. In fact, it grows increasingly difficult to discern the difference between high-tech industry and venturesome hobbyists.

Here at DENVER PC BOARDWATCH, we survived, even thrived, through the traditional summer doldrums. We located 22 new boards coming on line this past month. Interest in telecomputing and telecommunications is growing daily and everything seems possible.

Recall from our July Issue that we noted the Department of Transportation offers an Automated Flight Service Weather Briefing System at (303)799-7000. We concluded the note with a wildly tongue-in-cheek request for satellite video or 100-mile weather radar via telephone - HAR HAR HAR. Well the joke is on us. Our story on Computer WeatherBank's service appears in the LONG DISTANCE section of this issue. In addition to on-line weather for any city in the nation, they do provide data for a national radar weather map as well as lightning strike maps. With appropriate software, this data is designed for graphic display. Sounds like a challenging programming project for the Macintosh community as well as EGA graphics fans on IBM compatibles.

The National Oceanic and Atmospheric Administration brought up their solar activity BBS this month. And Roger Beehler and Dick Davis of the Time/Frequency Division of the National Bureau of Standards in Boulder are working furiously on a triple redundant on-line time service for automated systems similar to the US Naval Observatory service

we highlighted in the May issue. By mid-October of this year we should be able to synchronize our PC clocks to the NBS master atomic clock to within milliseconds via a local telephone call.

Local Fidonet 104 continues a dramatic growth curve with new additions this month including two boards running multiple telephone lines.

With this issue we inaugurate credit card service for your convenience. You can now charge your subscriptions and we have added a telephone line at (303)973-6038 where you can phone in your order or tell us about your new BBS. You may also note our new typography and layout. While this reduces our page count from the normal 16 pages down to 12, the newsletter actually contains more text and information. Comments on the new format, both pro and con, would be appreciated. We have received an enormously positive response from the local telecomputing community in the way of subscriptions and informational assistance. While we take this as tacit approval of our efforts, we intend that you, the reader, will note some significant improvement with each and every issue.

Interest in on-line communications and the use of electronic bulletin boards by both Apple and IBM enthusiasts appears to be growing daily. And computer consultants, BBS system operators, professionals working from home, and hobbyists alike are turning to DENVER PC BOARDWATCH in increasing numbers for the latest in news and events affecting the Denver telecomputing community - a role we most happily fill. Enjoy!

Jack Rickard - Editor

## THE VERIFIED LIST

This month, DENVER PC BOARDWATCH presents 213 electronic bulletin board systems/on-line services for your consideration and use. All are available within AREA CODE 303 and the majority are a local call from the city of Denver. A total of 17 boards were deleted from last month's list with 22 new systems added in the past 30 days for a net gain of 5 BBS. Note this represents a change in roughly 10-12% of the listed boards since last month - about average volatility. As always, each and every system listed herein was verified/confirmed by actual telephone contact to ensure the accuracy and timeliness of this list. If you note changes, please call (303)973-6038 or drop us a note to the address listed on the back page.

# DENVER PC BOARDWATCH

## CONFIRMED LIST OF ELECTRONIC BULLETIN BOARDS AND ON-LINE SERVICES

TITLE	TELEPHONE	BPS	HOURS	DESCRIPTION	TYPE
Aces High	329-6579	3/12	24	Programming/General Messages	Franklin
Aerie, The Fido 104/40	623-7865	3/12	24	Leisure/EchoMail/Discussions	Epson
Albuquerque Starport	494-7224	3/12	24	Commodore 64 downloads	C-64
Alpha BBS/ Intercomex	367-1935	3/12/24	24	Tandy/Ham Radio/Space Topics	TRS
AmNet On-line	1-223-1297	3/12	24	Animal Rights Issues	IBM
Apparat Inc.	790-7947	3/12/24	24	IBM Fido board	IBM
Apple Pi A La Modem	427-7114	3/12	24	Apple User Group Messages/Downloads	Apple
APSNNet	693-6737	3/12/24	24	Aurora Public Schools Network	Apple
Aurora Multi-System	745-3414	3/12	24	Amiga/Atari/IBM	Amiga
Aurora Net	680-9292	3/12/24	24	Protree Prime/Elite Support Board	Apple
Avant Garde	337-4069	3/12	24	Group Story "Days of the Knights"	Apple
Back Door BBS, The	690-0194	3/12/24	24	Games	Apple
Baha'i Board	449-3306	3/12/24	24	Religious/Philosophy/Baha'i faith	IBM
Bit Bucket, The	790-7024	3/12	24	Wildcat BBS	IBM
Blue Planet	979-7299	3	24	Space Wars Game	Tandy2000
Boulder Fido 104/77	497-6968	3/12/24	24	Messages and Downloads	IBM
Boulder MAC Maniacs	530-9544	3/12	24	MAC Messages	MAC
Box's Cabin, The	424-9185	3/12	24	Apple/Technical Notes	Apple
Buck Board, The	425-9283	3/12	24	Veterans messages, TRS-80, Amiga	TRS
Bud's BBS	761-6807	3/12	24	Atari - 3.123 Megs - News items	Atari
C.A.C.H.E BBS	745-4960	3/12/24	24	CO Apple & Compatible Home Enthusiasts	Apple
C.A.R.L Boulder/Broomfield	444-2057	3/12	24	Library Research	Tandem
C.A.R.L Colorado Springs	1-632-2194	3/12	24	Penrose Library	??
C.A.R.L Denver	830-1548	3/12	24	Colorado Association Research Libraries	Mainframe
C.A.R.L Denver	830-1547	3/12	24	Colorado Association Research Libraries	Mainframe
C.A.R.L Denver	830-0519	24	24	Colorado Association Research Libraries	Mainframe
C.A.R.L Denver	830-1546	3/12	24	Colorado Association Research Libraries	Mainframe
C.A.R.L Denver	830-1165	3	24	Colorado Association Research Libraries	Mainframe
Career Connection/DRUG	671-0801	3 to 96	7P-7A	Job List/Resume/Denver Rainbow Users Grp	DEC100
Castle Darkhorn	220-1588	3/12	24	Role Playing Games	??
Catspaw SNOBOL4/ICON 15/22	1-539-4830	3/12/24	24	SNOBOL/ICON Programming Languages	IBM
CBA Information System	329-0159	3/12	24	Continental Basketball Association	IBM
Chariot Communications	1-632-4111	3/12	24	Subscriber Only BBS Unix System V/NALPS	IBM
Cherry Hills Village Post BBS	762-1981	3/12	24	Cherry Hills Village Elementary School	Apple
Christian Protocol	745-1504	3/12/24	24	Christian Messages/Bible Text	Epson
Club House, The	756-9134	3/12	24	RP Games/Golf Format/Messages	Apple
Club Micro Max Fido 104/88	832-5850	3/12	24	"C" Language/ Database/Comm files	IBM
Coco County Airport	343-6707	3/12	24	TRS Color Computer Support	CoCo
Colorado Broadcasters 104/42	572-6256	3/12	24	Commercial Radio Frequency Lists	IBM
Colorado Commodore Club BBS	452-0544	3/12	24	Commodore Info	C-64
Colorado FireNet Fido 128/16	1-591-7415	3/12	24	Colorado Springs	IBM
Colorado TravelBank	671-7669	3/12/24	24	Colorado Travel, Recreation, Ski Info	IBM
Colorado University	447-2540	3/12	24	University Mainframes (Require Access)	Mainframe
Comm-Net Information Service	340-2473	3/12	24	* C-64/C-128/Amiga Info/Dnlds/Messages *	C-64
Comm-Net Information Service	366-7177	3/12	24	* C-64/C-128/Amiga Info-Dnlds-Messages *	C-64
Comm-Post, The	534-4646	3/12/24	24	Astronomy, TI-PC, Tandy 1000/2000, Jokes	IBM
Commstar Enterprise	1-597-8670	3/12	24	Commodore 64 with Tesseract Drive	C-64
Communication Companion 128/12	1-685-4333	3/12	24	Manitou Springs - Recipes, Writers SIG	IBM
Comp-U-Rado Node 1	1-593-1072	3/12/24	24	MS-DOS/CP/M	??
Comp-U-Rado Node 2	1-591-9448	3/12/24	24	MS-DOS/CP/M	??
Computer Farm	1-632-0669	3/12/24	24	FCC Echo IBM Hardware/Software Sales	IBM
Computer Know How	279-0224	3/12	24	Hard drive installations/technical supp	CP/M
Computer Repeats Inc.	939-8174	3/12	24	Used Atari Equipment Sales	Atari
Computer's Choice 128/17	1-528-1580	3/12	24	CP/M Files - Computer Products Sales/svc	IBM
Computerland of North Denver	420-0126	3/12	24	Computerland support BBS	IBM
Computers Unlimited	762-9122	3/12	24	Sanyo MBC-55X Support	IBM
Control Headquarters	1-472-0902	3	24	INFO NEEDED	??
Control Point Fido 104/711	526-9642	3/12/24	24	*Excellent* PC Software Download Files	IBM
Control Systems	458-6248	12/24	24	IBM/Compatibles Subscription Board	IBM
Controller Board/TBBS Island	690-9423	3/12	24	Computer Supplies	TRS
Council of Whitestone	699-0326	3/12	24	D&D Role Games - Jokes	IBM
CP/M SIG INC Fido 104/372	465-1313	3/12	24	Oldest User's Group in Area - CP/M - IBM	IBM
CPU Board	1-772-7229	3/12/24	24	Downloads and Useful BBS Info Since '83	TRS
Crossroads	989-8397	3/12	24	Discussion	TRS
CS BBS Service I	1-531-6668	3/12/24	24	Subscriber Access Fido 128/11 Zenith	IBM
Custom HUB	1-598-4500	3/12/24	24	Colorado Springs HUB	IBM
Data Bank	494-0167	3/12/24	24	IBM Messages - Good Utilities	IBM
Day's End Fido 104/20	650-5636	3/12/24	24	Downloads, Messages, Astronomy	IBM
DBSYSTEM Beta Test BBS	893-5717	3/12	24	New BBS Software - Comm.Radio Survey	IBM
Death Star, The	781-6863	3/12	8P-6A	Fun Posting	C-64
DEKBBS	1-635-3732	3/12	24	CP/M Files - Computer auction	??
Dementia	989-8470	3/12	24	American MENSA Denver Chapter BBS	Apple

# DENVER PC BOARDWATCH

## CONFIRMED LIST OF ELECTRONIC BULLETIN BOARDS AND ON-LINE SERVICES

TITLE	TELEPHONE	BPS	HOURS	DESCRIPTION	TYPE
Den HUG	331-0982	3/12	24	Denver Heath/Zenith User Group	Heath
Denver Deaf-Net	989-9245	3/12	24	Hearing Impaired / Computing	Apple
Denver Metroplex Fido 104/69	455-3283	3/12/24	24	Autocad/Computer/Sexual Boards	Kaypro
Denver Mile High Mac Meet	758-9159	3 to 96	24	Macintosh Users Group	IBM
Dialamatch 118/The Brokerage	796-9721	3/12	24	Adult Matchmaking	Franklin
Dilligaf	1-593-2232	3	24	INFO NEEDED	??
Dinosaur Board	1-652-3595	3/12	24	Specializing in Outdated Computers	TRS
Discovery, The	388-5437	3/12	24	Music/General	Apple
DJ	789-0500	3	24	Galactic Conquest Game On-line	Apple
Dragon's Shadow	841-3721	3	24	Fantasy/games	C-64
Eagle's Nest	933-0701	3/12	??	INFO NEEDED	??
Eagles Nest Fido 128/18	1-598-8413	3/12	24	Eagleview Middle School	IBM
Education 2000 Fido 104/29	449-9807	3/12	24	Education Issues K-12	IBM
Electronic Locksmith 128/22	1-392-2906	3/12	24	Rick's Locksmith Service - Security CO	IBM
Electronic Locksmith RCP/M	698-1623	3/12/24	24	50M Downloads (CP/M & MS-DOS)	CP/M
Elkridge West	1-488-2671	3/12/24	24	INFO NEEDED	??
Enterprise	860-1323	3/12	24	Commodore board with 3.6 Meg	C-64
Entertainment Line Fido 104/36	969-9510	3/12	24	Movie, Video, Music Reviews/Ranking	IBM
Epoch 2000	1-531-6172	3/12/24	24	Astronomy	??
ETA Denver Fido 104/32	750-5042	3/12	24	ANSI, Messages, Weather Forecast, Dnids	Tandy
Eusebeia Fido 104/18	430-8376	3/12/24	24	Christian BBS - Full KJV Bible Downloads	IBM
Excalibur Fido 104/39	497-6673	3/12/24	5P-8A	C Program files C Echo area	IBM
Experience Software	798-0792	3	24	Franklin Messages	Franklin
Fantasy Mountain	278-8369	3/12	24	Art/Downloads	CP/M
Fiddler's Fido 104/606	674-1859	3/12/24	24	IBM Equestrian	IBM
Fido NBS 104/607	497-3934	3/12/24	24	National Bureau Standards - Jobs SIG	IBM
Four Wheeling BBS, The	469-4954	3/12	24	Jeeping/Camping/Outdoors	Atari
Galafrea	987-0161	3/12	24	C-64 Downloads/Messages	C-64
GateKeeper, The	755-4210	3/12	24	Gateway High School BBS	Apple
Gay Community Fido 104/19	795-1215	3/12	24	Messages/Downloads for Gays	IBM
Genesis Project	287-8267	3/12/24	24	Apple II General	Apple
GLOBAL Information	286-7914	3/12	24	Fee Subscription/Software Database	VAX
Greeley-Com-Net	1-351-8861	3/12/24	24	Micro Store Support Board	Apple
Greenline	469-2053	3/12	24	Amiga	Amiga
Greeter Hub	1-473-3837	3/12	24	Discussions	IBM
Grizzly King	666-0824	3/12	24	Freeware/Colorado Outdoors/Programmers	IBM
Grotto, The	694-9050	3/12/24	24	Amiga, Pascal	IBM
Hack Shack	688-8406	3/12	24	Commodore	C-64
HIP Shack 128/19	1-593-0766	3/12/24	24	Amateur Radio - Packet - Short Wave	IBM
Hobbit Inn	237-5289	??	??	INFO NEEDED	??
Hollows, The	428-0372	3/12	24	Apple II Messages	Apple
HP-BBS Fido 104/34	1-229-9719	3/12	24	Jokes, Amazing but True stories	HP-Vectra
In To The Night Fido 104/31	659-1897	3/12	9P-3A	General Fido Messages/IBM Game Files	IBM
Insight	573-2071	3/12	5P-7A	Downloads, On-line Games	??
Interface	1-390-3217	3	24	Subscriber areas - online hardware order	??
Investors BBS Service	1-481-4525	3/12	24	Stocks and Investments	IBM
Isle of Man	447-1942	3/12	24	Gay Community BBS	IBM
King's Market Bookshop	665-6091	3/12	24	Books, Writers, Timex SIG, Zork	TRS
Kings Bench Fido 104/615	377-6725	3/12/24	24	Tandy 1000 ONLY/\$2 Registration/Messages	TANDY
L&L Support	420-3568	3/12/24	24	Primary GBBS Pro Software Support BBS	Apple
Lakewood Department of Safety	987-7388	3/12	24	Police Sponsored - Law Enforcement Msgs	IBM
Lakewood RCPM/RBBS	985-1108	3/12	24	CP/M MS DOS Downloads	CP/M
Land of London	987-2094	3/12	24	Fantasy Runequest Games	Apple
LES-COM-NET	233-5824	3/12	24	Lesley College Communications Network	Apple
Libyan Embassy	688-1127	3/12	24	Atari Games	Atari
Magic	791-8732	3/12	24	Macintosh/Apples GS Software & Support	MAC
Manville Information Services	978-3946	3/12	24	Business Software/Macintosh	IBM
mbkSYS! Fido 104/22	443-9155	3/12	24	Writers Tools/Science Fiction	IBM
MED - Link Fido 104/444	443-4353	3/12	24	Medical Info / TI 99/4A / MS-DOS	IBM
Metro Computer Exchange	753-6677	3/12	24	IBM - C64 Messages and Downloads	IBM
Metro Data Exchange	830-2445	3	24	Commodore 64 - Grateful Dead Schedule	C-64
Microlink B Fido 104/108	972-4181	3/12/24	24	Fido Board - Good Downloads	IBM
Mile Hi Forem	431-1404	3/12	24	Atari Support	Atari
Mile Hi Tech Fidonet 104/56	973-9338	3/12/24	24	Fido Area Coordinator - Fido News/List	IBM
Mile High Epson User Group BBS	752-2943	3/12/24	24	MHEUG Club Board	EPSON
Mile High Net	671-7308	3/12/24	24	Fido Board	IBM
Minds of Mines (MOM) BBS	273-3989	3/12/24	24	CSM Artificial Intelligence/Geotechnical	TI
Modem Net 104/47	680-8153	3/12/24	24	Multiline - INFOMAT - Online mail order	IBM
Mountain Amiga Enthusiasts	1-564-0618	3/12	24	Pueblo Amiga Computer BBS	Amiga
Mountain Shadows Software	1-598-0111	3/12	24	Computer Solutions MAC/Apple II	MAC
Musician's Den Fido 104/17	321-6857	3/12	7P-9A	Music interests -24 hours on Sunday	IBM
Mycroft	777-8898	3/12	24	Horizon Computer/National Atari BBS List	Atari

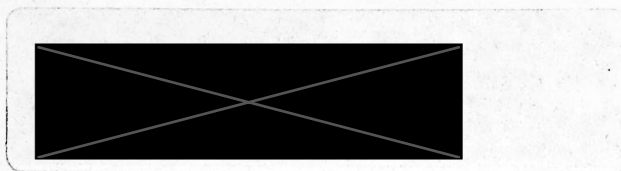


# DENVER PC BOARDWATCH

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TITLE	TELEPHONE	BPS	HOURS	DESCRIPTION	TYPE
Networks Unlimited	296-3210	3/12/24	24	Messages/Downloads/Polls	IBM
Night Shift, The	322-1544	3/12	24	Casino, Football	Apple
Odyssey III	691-0169	3/12	5P-8A	Adult(18) / Sex Oriented - Members Only	Apple
Old Colorado City Elec Cottage	1-632-3391	3/12	24	Public Access Unix Sys V/ NALPS Graphics	IBM
Old West	393-7519	3/12	24	BBS List, RP Games, High Score List, Msg	C-128
On-Line Consulting Fido 104/45	449-5251	3/12/24	6P-8A	Consultant Directory/Desktop Publishing	IBM
Optotech Inc	1-570-7973	12	24	400 Meg Optical Disk Drive	IBM
P*P CompAS	1-591-1453	3/12	24	Pikes Peak Computer Applications Society	IBM
PACE	428-3696	3/12	24	Practical Apologetics/Christian Evangel.	??
Paradise Inn	421-1967	3	5A-9P	Commodore 64 Program Files (2.6 MBytes)	C-64
PC Computer Brokers	452-9567	3/12	24	IBM, Epson Equity, TRS-80 Club Msgs	IBM
PCjr Net Fido 104/904	789-4610	3/12/24	24	IBM PC Jr. Technical Information / Files	IBM
PCR HUB	1-635-8808	3/12	24	Online Novel - Not Bad!	IBM
Phoenix TBBS Fido 104/739	841-9570	3/12/24	24	3 Lines/Online Chat/INFO-MAT/Spreadsheet	IBM
Phone Connection	426-7969	3/12	nights	Commodore	C-64
Photo Tech BBS	781-1079	3/12	24	TRS 80/ HAM/Video/Camera	TRS
Pinecliffe Fido 104/28	444-7073	3/12/24	24	125 Meg - Online Order for CDB Systems	IBM
Pirates Cove	798-1207	3/12	24	Apple BBS with Pirate Theme	Apple
Playhouse	286-7399	3/12	24	Adult BBS/Jokes	Apple
Professional System, The	740-2223	3/12	24	Writers, Lawyers, EDP Auditors	IBM
Prom Blaster	422-3759	3	24	Apple Conversation	Apple
Property Owners Marketing Sys.	973-0100	3/12	24	Real Estate - Poorly done and hostile	IBM
PSINet	985-2634	3/12	24	Parapsychology/Near Death Exper./Bibliog	TRS
Publishing Resources Inc.	442-2011	3/12	24	Laser Printing/Publishing/Linotronic	MAC
QBBS Central Fido 104/24	423-3114	12	24	QBBS BBS Software Beta Test	IBM
Reggae Land	690-8144	3	10P-6A	Commodore	C-64
Regimental Headquarters	375-9556	3/12	24	Commodore - Military Theme	C-128
Roach Motel	697-1225	3	7E2	Commodore	C-128
Rocky Mountain 99ers	288-3692	3/12/24	24	RM99ers Club Board Texas Instruments 99	TI99
Rocky Mountain RBBS	750-2107	3/12	??	INFO NEEDED	??
Ron and Shannons AMIS	978-0298	3/12	24	Atari Support 5.4 Megs	Atari
Running Board	252-4051	3/12	24	Transportation/Atari	Atari
Sanitarium	750-0563	3/12	??	Commodore	??
Secure-Net	757-6096	3/12	24	US Alarms Inc. Crime Prevention - Safety	IBM
Shaman Exchange	969-8585	3/12	??	Multiline System	Apple
Sheridan & Associates	935-1489	3/12	24	Buy/Sell/Trade - Chess History	Apple
Skyline Computers	457-0320	3/12	24	Atari Messages	Atari
Smart-Net	1-578-9406	3/12	24	Dungeons/Dragons Games	IBM
SMMUG	1-598-0111	3/12	24	Macintosh	??
Softronics	1-593-9530	3/12/24	24	Private Software Support	??
Solid Software Fido 128/15	1-591-4273	3/12/24	24	Zenith 50 Meg	IBM
Sort Support	699-8222	3/12	24	eSoft Inc. TBBS Software Support BBS	IBM
Space Environment Service Cntr	497-5000	3/12	24	NOAA Solar Flare Forecast/Advisory BBS	??
Space Network	494-8446	3/12/24	24	Space Exploration Information	IBM
Spam Mania	423-0348	3/12	??	INFO NEEDED	??
Springs Net	1-634-6077	3/12	7P-11P	INFO NEEDED	??
Superguild 64	1-473-5739	3/12	24	Commodore	C-64
T/Talknet Towne Crier	1-390-8012	3/12	24	Talknet Online Newsletter	TRS80
TAC Headquarters	322-8337	3/12	24	Commodore	C-64
Taj Mahal	451-7222	3/12/24	24	20 Mbytes Apple	Apple
TBBS Net Fido 104/23	699-9248	3/12/24	24	The B/read B/oard S/ytem Support	IBM
TBBS#1 of Denver	792-2032	3/12	24	Apparat Computer BBS	IBM
Telenet	337-6060	3/12	24	Packet Data Network	NET
Telenet	337-6000	3/12	24	Packet Data Network	NET
Temple of Doom	771-9523	3/12	??	IFO NEEDED	??
Terus Public BBS 104/42	469-7161	300-9600	24	MINDS AI Text Interface Support BBS	IBM
The 8th Sea Fido 104/610	252-9235	3/12/24	24	Scuba and Rescue Messages / Wiccan	IBM
The Vine	1-596-1216	3/12	24	Religious	IBM
This End Up Fido 104/30	430-1585	3/12	10P-10A	New Board - dBase - Utils	IBM
Trekker World	745-9530	3	7A-10P	Star Trek Fanzine	Apple
Vern's Terminal Exchange	433-1150	3/12	24	Commodore Messages/Downloads/Ads	C-64
Villa TI	1-574-2567	3/12	24	Front Range 99er Computer Club	TI
Waterton Computer Club	977-7995	3/12/24	5P-7A	Martin Marietta Employees - 30M Dnlds	IBM
Werdna's Lair II	331-9276	3/12	24	Games	Apple
White Runes of Tinuviel	972-8566	3/12	24	Tolkien Subjects/Dungeons and Dragons	Atari
WILDCAT! Orphanage	1-390-7925	3/12	6P-7A	Talknet Town Crier sister board	IBM
Wizardry World	979-1052	3/12	24	Trivia	Atari
World Peace PBBS	320-4822	3/12/24	24	Current Events, Politics, RCP/M	Heath
ZAP!	367-4103	3/12	24	Atari/ST/8 Bit	Atari

Denver PC Boardwatch  
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